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GUIDE

FOR THE USE OF

SELECTED YEASTS

FOR THE FERMENTATION OF

WINES, CIDERS, ETC.

FROM THE FRENCH WORK OF


GEORGE JACQUEMIN

Scientific Director of the Institute La Claire.
Knight of Merit Agricole. Laureate of
the French Agriculturists.
Grand Prix Agronomique.

TRANSLATED BY

SIGMUND FEUST

SOLE AGENT

718 EAST 138th STREET
NEW YORK   U. S. A.

The Use of Our Selected Yeasts

is authorized and even recommended by Men of Science.

Some wine growers hesitate to use the Selected Yeasts for the fermentation of their wine crop under the supposition that they might be blamed for adding foreign substances to the wine.

Not at all, as old practice has authorized the fining and sulphuring which add foreign substances to the wine, but our Selected Yeasts add nothing new (foreign to the grape), they regulate and direct the fermentation, increasing the alcoholic strength, and enlarge the permanent flavor and fine quality of the wine, and assure its good preservation.

Our Selected Yeasts have for their first origin the grapes of vines from which the ferment has been extracted, and

They Carry No Foreign Element to the Wine.

Their addition is permitted and even recommended by Men of Science, for they constitute the best aid and way and means to increase the good qualities of wine in an absolutely natural fashion.



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Nature and Origin of Yeast.

Wine which reasonably can be considered the most beneficial drink of humanity does not exist, all formed, in the fruit of the vineyard.

Of the berry it is born, doubtless, but the set of operations, pretty numerous, intended to bring it forth from the elements, constituting the juice of the grape, as it is called per se, are very complicated modifications. The most important of these processes, called vinification, or the art of making wine, doubtless the most important, is that known as fermentation.

Mankind, which has never ceased to appreciate its most choice drink, and which has been always anxious to perfect it, be it by cultivation, be it by a better selection of vines or superior care applied to winemaking, knows to-day, through science, the weighty importance of fermentation.

ORIGIN OF THE WORD FERMENTATION.

The word fermentation comes from *fervere*, "boiling," bubble up. Actually one notices in the cider coming from the crushed grapes a product which appears free from small gaseous bubbles which show themselves and burst on the surface, similar to the action of heat on liquids, and when the fermentation has set in throughout, shows a kind of boiling which stirs up the whole mass.

It is a releasing of carbonic acid, coming tumultuously, due to this phenomenon of effervescence, accompanied by a corresponding production of alcohol, and is considered at another time as a chemical phenomenon not to be defined clearly as to cause, the reduction of saccharine (sugar matter).

This expression, fermentation, has been generalized later on and applied to other chemical transformations of bodies, mysteriously the same as saccharification of sprouting barley, the acetification of wine, or the fermentation of vinegar, as in a parallel or similar case, there is no freeing of gases nor effervescence.

We know now-a-days that alcoholic fermentation, the only one which we have considered at this moment, is not a simple chemical action, but a phenomenon more complex and of a physiological method of order, for it is connected intimately and absolutely with the existence of organical living beings, generally known by the name of fermentation, or as yeast, or more particularly by the name of *saccharomyces* to distinguish them from other ferments (yeasts) who bring forth from the same fermentable matter, sugar, lactic fermentations, butyric and others.

THE SPECIES OF SACCHAROMYCES AND HIS GREAT BRANCHES.

The species of *saccharomyces* comprehends kinds, and numerous varieties of each, or races of different characters, sometimes well decided. For example, it is the *saccharomyces cerevisiae* who presides at the fermentation of beer. There are different species which permit to adopt one or the other method of manufacture, for high or low fermentation, and his varieties of race, which give to beer a different taste aside from that resulting from the hopping.

The yeast which makes the new wine grapes ferment, delivered of itself (from the grape) composes itself of different species of *saccharomyces*, *ellipsoideus*, *apiculatus*, *pasterianus*, etc., and each one possesses also its different races, who agitate in a determined way and give to wine its essential qualities.

WHERE DOES YEAST COME FROM?

From where comes the yeast? Of germs which the air contains in suspension in the middle of its dusts?

By exposing to the air sugared must (new cider) one can see it start and begin to ferment after more or less time of exposition.

People are not so prejudiced, writes Mr. Duclaux, in 1887, and are never so prejudiced not to see the profit of starting and introducing the alcoholic fermentation.

That was true in 1887, but quite well changed in this respect in 1890-91, so much so that in a very few years there will be no wine-making without ascertaining previously the kind of yeast most advantageous for it.

But this act of fermentation which has been so differently interpreted, where does it come from in reality?

Gay Lussac, the celebrated, by his experience made us believe for a long time that yeast remained in a latent hidden state in the interior of the grape or berry, and that contact with the air was sufficient for it to become active.

Later Mr. Fremy, inspired partly in this way, looking backward, affirms that in the production of wine it is the sugar of the fruit itself which in contact with the air gives birth to the grains of yeast by the transformation of the albumenoid matter, as further he adds that Monsieur Pasteur holds that the grains of yeast are produced by germs. But the illustrious Pasteur demonstrated with his accustomed superiority, with all the rigor resting on his experience, that the yeast exists on the surface of the berries, on the exterior of the fruit without speaking of neighboring (bordering) parts accompanied by spores of different bacteria, in the midst of different atmospheric pollens.

It results therefrom that in a must of berries left to itself, the spores of yeast evolve and transform themselves in yeast, which determining (fixes) the alcoholic fermentation, but which, alike with the bacteria, enters in life, and takes part at least of the same mode of existing, drawing its nourishment from the same source of sugar without furnishing alcohol. Of these bacteria, the ones hindered by the prominence of *saccharomyces*, which have invaded the whole field, may disappear, but others more resisting, continue to live after the yeast has produced all its effect, AND CERTAIN ONES BETWEEN them will sow later on the diseases of wine described by Pasteur.

Also the results of this natural fermentation does not give the desirable assurance for the good preservation of wine, which is a positive fact well to keep in mind—for all is not perfect in this world of phenoms, and we must admire the possibilities given to man to establish order, and near perfection.

HOW TO AVOID THE ACCIDENTS OF WINE MAKING.

Left to itself and the resulting change of the wine.

One can start to give the principles of the solution of the great problem of the preservation of wines, the beginning of which was sown in the valuable works of d'Appert Gervay de Vergnette Lamotte, crowned by the intervention of the immortal Pasteur, who had the honor to solve in all its parts this important problem by the operation which bears his name, the pasteurization by rational heating of fermented drinks.

But would it not be better to protect the wine of all causes of disease by directing the vinic fermentation and regulating in such a way as to avoid all bacterieuse fermentation (taking place at the same time)?

That is the last evidence, and science and practice are in perfect agreement on this point, since more than a dozen years is sufficient to determine the fermentation by the influence of pure selected yeasts, in a way that they domineer among them, and suppress the natural fermenters, good or bad, and prevent their spores to evolve, no more germs of undesirable nature, no more wine diseases.

Experience has shown that all fermentation, if directed rationally, procures at very small expense, an improvement of wine in point of higher degree of alcohol, of boquet or flavor, of quicker clarification and finally in better preservation (keeping).

HOW ARE THESE PURE SELECTED YEASTS OBTAINED?

To separate the yeast of wine from its troublesome and disagreeable neighborhood—the spores of inferior *saccharomyces*, apicul mould and numerous bacteria—one can use two general processes, one which permits the obtaining of pure yeast exempt from bacteria and mould, and the other one which to these advantages joins that of separating the different races of yeast to work their selection. This last process I will now describe concisely, the same as I practice it.

Choice ripe grapes of vineyards of selected grand vines, far off from dusty roads, come to me in the best possible condition.

I recommend specially these minute precautions.

Of each bunch I select some berries of irreproachable aspect which are crushed most carefully, and from them a must of about a quarter of a liter which I introduce in a sterilized balloon of Pasteur.

At the end of a couple of days the fermentation is in full activity in the midst of the balloon.

There are living not only the different races of *saccharomyces ellipsoideus* which form the yeast of wine, but also the *saccharomyces pasteurianus* and *apiculatus* which are always found in the must of wine, then the bacteria (sown) by the air, etc.

Taking from it some drops of must of wine in fermentation, and diluting it in sterilized distilled water, I obtain a spreading of the yeast cells. A small quantity of this liquid is warmed to 30° C. gives a nourishing must, gelatine already added in such quantity that the temperature of about 25° C.; commence to place the cells distant from each other by means of agitating the must. Then I diffuse on a sterilized glass plaque about 1 c.c. of the preparation of the gelatinous culture. The plaque is left in the humid chamber. At the end of a few days one

sees colonies appear, each one issuing from one of the single cells of yeast which have been disseminated in the gelatine must.

By means of a singed platina thread I stock Pasteur balloons with each of these colonies, and pretty soon the fermentation comes forth.

Each balloon contains one yeast coming from the proliferation of a single cell of primitive fermentation of wine.

I divide these yeasts by a process, the description of which would keep me too long, and finally, after having eliminated the balloons containing similar races, I have begun to possess a series of types of pure races of unique yeast, the similarity of which forms the elliptic primitive wine yeast.

As certain yeasts produce more alcohol in wine, the fermentation of which becomes more complete, one sees that it is easy for me to mix different races of more active yeasts to obtain a fermentation capable to produce to the wines the flavor (the vinosite) and an increase of degrees of alcohol so appreciated by the wine growers.

Glucosides Extract of Leaves of Grand Vines.

To explain the origin and qualities of the glucosides jaquemin, I reproduce one of the communications I have made to the Academy of Science on the subject.

NEW OBSERVATIONS ON THE DEVELOPMENTS OF AROMATIC PRINCIPLES BY ALCOHOLIC FER- MENTATION IN PRESENCE OF CERTAIN LEAVES.

July 12, 1897. I have submitted to the Academy of Science the result of my researches on the development of aromatic principles by alcoholic fermentation in presence of certain leaves, and I have shown that the yeast by a diastase which it excretes and does reduce to one-half certain glucosides contained in the leaves of the apple tree, the pear tree, the vine, and a special aromatique product which ordinarily characterizes the taste of the fruits, and in it a sugar which ferments with that of the liquid, working (amidst) in this cell life.

Following up my researches from this point, I have proved that the leaves of vineyards, from the different vines immersed in must of identical composition, ferment under the influence of the same yeast and give the liquids a taste of different flavor.

Desiring to apply these remarks to wine-making with a view of improving the wine, I have at once recognized that the introduction of a whole or hashed leaves in grapes must communicate to the wine a peculiar taste savoring of the hollow leaves which disguises partly the odorous principles called forth by the fermentation.

This abnormal taste comes forth from particles of useless

leaves, and to be taken away under these circumstances I have prepared a special process of syrupous extracts of different grape leaves of famous vines.

I have to remark that this extract which includes the glucosides of leaves has by itself a disagreeable taste, which remains to the moment where the reduction caused by the fermentation could produce (show) itself.

Consequently, when in place of leaves one introduces in the must before fermentation a selected yeast and a moderate quantity of extract of leaves, a considerably improved wine is obtained.

This remarkable result is due to two causes.

The diffusion in the vinous mass of aromatic principles comes from the reduction (change) of the special glucosides and characteristics of the leaves from vines of great fame.

The most remarkable action in this case of yeast of great vines which sowed (planted) in a must of common wine, when in addition to glucosides, wine leaves are added from which comes the initiation (starting) of this choice selected fermentation, meeting amidst most favorable culture, since the extract has furnished it these principles which also, as it resulted from my previous researches, have been elaborated, by the leaves to emigrate in the fruit at the moment of principles (processes) to which particular the yeast of such (growths) of the same origin as the extract accommodates itself. It is well evident that under these conditions the physiological action of the yeast exercises itself most normally and draws advantage of what it manifests in the juice of grapes of great wine of which it is the originator; it results, therefore, that the flavor increased in this case by that evolution is much more marked than in the must of common wine to which no extract of leaves has been added.

I have had during the last vintages in points of France numerous experiences on red and white wines, and all the results have confirmed this point of view.

I will state among others a trial effected in the grounds under conditions offering all guarantees (by Mr. Malverzin).

The common red wine must, having been pasteurized with precaution required to preserve the color and divided in two equal parts, one of which received a kilo leave extract of grand vines de St. Emillion for 10 hecto-litres, previously mixed with the remains of pure yeast which had been prepared two days before.

The other part was sown with a (yeast bath) of the same yeast, but without the addition of leave glucoside.

Then a marked tubful was made in the old way of wine-making.

The three kinds, after being drawn, were cared for in the same manner and recently submitted to sundry professional wine tasters, who found a great difference of equality, and in consequence, of price.

For the first, the wine which had received the glucose extract had no taste from the earth and possessed a fine flavor.

Secondly, the wine which had received the yeast only kept partly its earthy taste, and the unique flavor of the yeast, while less developed, was yet very remarkable.

To be short, the report of the results of a large number of experiments made on a large number of hecto-litres of different wines on which leaves of vines of grand vines of renowned name were used in the form of glucosides, even in the minute dose of a thousandth part, proved it a precious auxiliary in wine-making to the pure yeast, and results in a grand improvement of wines.

MAIN CONDITION FOR THE SUCCESS OF THE EXPERIMENT.

It is indispensable to conform exactly to the directions given for the employment of glucosides, and to keep the wine in barrels of at least 22 gallons, preferably of 44 gallons. I have often stated the disadvantages of experiments made with too small quantities of yeast, and the same conditions apply to the trials of glucose; if one wants to avoid the errors of estimating a wine dried up and losing its qualities in too small a barrel.

The use of glucoside of leaves is destined to enter quickly in the practice of wine-making. It did since it was first used to place itself in the common conditions of wine-making.

Not to begin anew the mistakes of the first experimenters on wine yeasts who in 1891 and 1892 arrived at false conclusions because they made their wine in small barrels instead of barrels of 40 and more gallons, which is the only way to get the full benefit of the real effect of the fermentation.

THE TRIALS TO MAKE.

Knowing this discovery of glucoside extract of wine leaves, what shall the wine-makers do?

All those who since a number of years have always received entire satisfaction by the use of pure selected wine yeasts, may hope to receive a still better one, and will make another trial on a part of their product with glucoside added, while the balance will be yeasted in the old way, which is in vogue till to-day.

Those wine-makers are pretty rare now-a-days who have not yet found out the effects of selected yeast because they did not prepare their yeast bath properly, will, if they employ the new system, achieve a complete success, thanks to the glucoside.

From the point of the value of their wine, from similar trials which did not introduce an element foreign to the grape, for in the leaves are worked the substances of the fruit; these products are taken in use by every enterprising wine-maker.

The following chapter contains the results received in 1899.

QUICK CLEARING (CLARIFICATION).

I believe it prudent to state that wines treated with glucosides clear themselves very quickly, and sometimes quicker than those treated with selected yeast only.

It results that the employment of glucosides added to pure selected yeast does not at all stop the quickness of clearing, and the separating of wine is facilitated when the employment of glucoside has been made in strict conformity with the directions given later in Chapter 4.

We have the monopoly of the sale of glucosides.

This new process is reserved to our customers only who can order up to an equal quantity of glucoside to that of yeast, that is, they may order less glucosides, but cannot order more than their order of selected yeasts.

Results of the Use of Pure, Selected Yeasts and Glucosides During 1899.

We will now relate the results obtained in 1899, when the number of buyers of pure selected yeast had reached 18,000.

The employment of pure selected yeasts has rapidly expanded in France and the entire world, notwithstanding the theories of its adversaries, more or less inconsistent in this great progress carried on by the wine-making industry.

Only in 1891 this institute was started, and my selected pure wine yeasts put at the disposal of the wine-makers.

The territory was prepared and showed this year a remarkable progress which in all probability will be felt soon.

In 1892 more than 4,000 wine-makers; in 1893 about 5,500 (making more than 1,000,000 hecto-litres), have used these pure selected yeasts.

In 1894 the number rose to 8,000 wine-makers using these wine yeasts. In 1895 more than 9,000 wine-makers have also fermented their wines with them.

In 1895 it was very favorable to the ripening of grapes, and notwithstanding that my selected yeasts were in great demand, it resulted in numerous inquiries received of wine-makers and friends of progress, who desired me to aid them in fixing the rules for using the selected yeasts. 1896 was in many regions very unfavorable for the wine-makers on account of excessive fall rains.

A great number of wine-makers used our yeasts the first time and we had for the year 1896 more than 14,000 customers.

The following years the number of our customers rose in succession till in 1899 it exceeded 18,000 for this whole year.

As in previous years, I have addressed to a certain number of wine-makers the names which were taken out at hazard from the friends of progress who have yeasted their wines, a letter asking them to inform me of their observations.

I wanted to publish all these letters, of which the larger part is very interesting, and often very instructive, but I limit myself to a few of them.

The reading of these letters which I publish demonstrates to those who are hesitating that the yeasting of wines is the best way to improve wines in a commendable and healthy way; in all cases which are shown, during the hot as well as during the cold or rainy years, when the quality of grapes have been sound or very ripe, or when they were green, infected by cryptogamanique diseases, the quality has always been improved, not only the common wines, but also those which are naturally of good quality, and which when yeasted became still better.

AS TO AMERICAN VINES, THE WINE OF WHICH POSSESSES SOMETIMES A FOXE, DISAGREEABLE TASTE, THEY GIVE, THANKS TO THE SELECTED YEAST, A WINE OF GOOD QUALITY, EXEMPT FROM ABNORMAL TASTE AND SELLS AS EASILY AS THE WINE FROM FRENCH VINES.

Finally, the conclusion to draw from the persual of these letters shows the perfect results obtained by the use of selected yeasts, even without the aid of glucosides, of which I spoke in the preceeding chapter.

It clearly results in the proof that the wine-makers can and will continue to use the unique selected yeasts, as they have practiced the preceeding years, even if they do not use the mixed method, glucoside and yeast, which I advise as a further justified experiment to augment the effects of the yeasts in the wine countries where the effect did not appear marked enough.

Always I dare assure that the new method with glucosides gives still better results yet.

To avoid all ambiguities I repeat once more that the methods of wine-making which I have stated with or without glucosides do not enable to change a common wine into a grand wine, it is though in simple words to effect a very great improvement in wine.

Chautelle, April 22, 1900.

Dear Sir:—Since four years I have used your selected yeasts for my red wine. I have received good results, the wine was finished sooner, the taste more developed; the yeasted wine has kept better than that in barrels not yeasted.

For the harvest of 1899 I have used the selected yeasts as in previous years, and have also used your glucosides. I obtained surprising results. My wines, which as my neighbors say were formerly inferior to theirs, are now as they and the parties who buy of me say, greatly superior. I remain, and etc.

MELIN.

St. Pierre, March, 1900.

Dear Sir:—I say one cannot be more satisfield of the selected yeasts, which you sent me in October, than myself.

Notwithstanding that the grapes were not first rate, we had a very nice wine, superior to that of previous years, particularly an increase of quality and flavor. I thank you and will order again this year. I remain, etc.

P. BLANC.

Serrieres, March 8, 1900.

Dear Sir:—Since five years I employ your yeasts successfully. My vintage of red wine is entirely composed of Syrah on the sides of the river Rhone. I used the selected yeast, and can state that my wine is clearer and fine, a rare thing in our parts, and keeps perfect.

My vintage of white wine is composed two-thirds of Chasselats and one-third of Rousanay.

For my white wine the selected yeast Sauterne has done still better yet.

I have white wines made exclusively of Chasselat grapes with your selected yeasts, which are a perfect imitation of Sauterne.

This year I have added your glucoside, and state that my wine is highly superior and of a more pronounced flavor than that of last year.

In one word, wines carefully made with your selected yeasts are very superior; they keep well and acquire after some months and sometimes a year, fineness and flavor.

P. ROYER,

Director of the S. E. Agricultural Office.

Bar sur Aube, March 14, 1900.

Dear Sir:—I used your yeasts in 1898 and 1899, and can only laud the good results obtained.

I state that I have more than three-quarters of a degree for yeasted wines during these two years; my wines were superior, regardless of the territory, in strength as well as flavor.

At this moment I have some white wines of 1899, and it hurts my feelings to drink them for Bar sur Aube wines, so superior are they, and taste like Chablis (a superior wine).

I usually use your Chablis yeast for white and Romane yeast for red wine.

I have found there is no deterioration to fear in yeasted wines from the file, or other diseases. I remain, yours, etc.

C. MIGEOT.

Bar sur Aube, Feb. 28, 1900.

Dear Sir:—Since 1896 I availed myself of your yeasts. In that year I made my crop in white wine with Chablis yeast, which I introduced before the barreling up, in the barrels in equal proportions, and got an exquisite (extraordinary good) wine of perfect flavor and extraordinary clearness.

The following years I made my red wine with Pinot yeast, which I prepared 48 hours in advance with fresh grape juice in the proportion of 2 1-5 pounds yeast for 18 quarts of juice. I watered my tub, scouring it carefully, and then yeasted after every layer of 18-inch thickness of grapes.

In that way I obtained an almost instantaneous fermentation; on drawing it off the quality proved superior, more alcohol and flavor having developed.

In 1899 I was more careful. I prevented the evaporation from the bunghole, which was neglected before, and got a wine superior in alcohol, flavor and clearness, and at this moment this wine, which has passed the winter, is in every point of such a remarkable superiority, that I will bottle it.

My vineyards contain all kinds of vines.

It is though with entire satisfaction that I give you these details, hoping that they who will read these lines will use your yeasts, for I have the conviction that the time is coming when the purchasers of wine will look for yeasted wines in preference to others. I remain, etc.,

L. JEANNOT.

Bar sur Aube, Feb. 22, 1900.

Dear Sir:—In reply to your favor, I have nothing but praise for you as regards your yeasts, as well as for their activity or keeping qualities, of red or white wines, etc.

I. DAMBONVILLE,

Wine Expert.

Ery, March 22, 1900.

Dear Sir:—I have used this year your Meursault yeast, on southern grapes, which I bought through Alicaute.

I was highly satisfied with these yeasts, for other people had the same kind of grapes and there was a great difference of quality, flavor, strength and clearness in the wine.

This year, if I buy the same grapes, I will use the same yeasts and will also order your glucosides.

In making cider I used your Chablis yeast. I am highly satisfied. I obtained an excellent result. I gave a few cans to some friends, who were equally astonished to see cider so clear and strong in comparison with the one which has not been treated. They recommend it this year.

Last year at our county fair I exhibited different ciders made with your yeasts, and the judges awarded me a medal.

I have also exhibited at the Troyes Wine Cultivators' Agricultural and Forest Fair, and also received a silver medal.
Yours etc.,
RUSSEAU.

Narboune, Feb. 23, 1900.

Dear Sir:—I have used your yeast for fermentation of white wines, which on account of a too large an abundance of sulphuric acid would not ferment before.

I am satisfied that the fermentation was more active than any I ever obtained. I remain, yours, etc.,
P. BARBAZA.

Coursau, Feb. 26, 1900.

Dear Sir:—Since six years I use your yeasts, and can affirm Give me your selected pure yeast, of course, sound and fresh, and I will always get good wine. I insist on this point, for I always think that is the question.

I believe that the greater part of non-success comes from yeasts badly selected, not made by you.

As far as I am concerned, I have yeasted actually between 600,000 and 700,000 gallons. I have no pretensions as to being a man of science, but I have commenced to use this method in all the wines I have made from the proceeds of my harvest.

I have found, indeed, that for our commercial wines, we can succeed to make a healthy and loyal wine from juice, whose qualities are lacking in the vat, by using your selected yeasts.

We also got, first, a more active and particularly a more regular fermentation; second, a more rapid clarification; third, a light increase of the flavor; fourth, an immediate, and easy utilizing of our products in current trade, WHICH IS A VERY IMPORTANT AFFAIR FOR LARGE CONCERNS.

In general, by yeasting I do not pretend to make fine Bordeaux Burgoyne from my poor grapes, but I claim that by carrying on intelligently my wine-making, to make good commercial wine even in poor years, and to be able to make use of my production at the same prices as my neighbors, and to select my own time as to the time of selling, not to mention the great advantage of being able to use my vats, presses, etc., oftener than others.

I own at Villeveyrac 50,000 vines, growing in a clay soil containing a good deal of iron, for the product of which I used your yeasts since five years.

The results from the point of fineness and general superiority are still more marked, for territory and vines, vary very much (if one takes advantage).

I use your yeasts and favor your method. I remain, etc.

DOCTOR GIBERT.

Nov. 14, 1899.

Dear Sir:—Your yeast has always given me a wonderful result, and my wine without flavor and very common, has reached, thanks to your yeast, a real fineness and increased value. I remain, etc.

PAUL LE SOURD,

Proprietor St. Georges at Didonne.
Domaine de Fout Remy, March 2, 1900.

Dear Sir:—In reply to your favor of the 20th inst., I cannot express all the satisfaction your selected yeasts have given me for my table wines.

The red ones, about four-fifths Gamays and one-fifth De-gontants and Balzar, showed, during the past years with your Romane yeasts, about 12° alcohol.

In adding in 1899 your glucosides, I obtained a clear wine with an agreeable flavor, showing more than 13°.

I have obtained the same satisfaction from my white wines, three-fifths Columbards and two-fifths St. Emillon, by using your Chablis yeast. My wine became 12° strong. Received, etc.

MULLER.

Beaune, Feb. 22, 1899.

Dear Sir:—We have your favor of the 20th inst. We have indeed used your Romane yeast and new glucosides. Our wines came out first-class, have a fine flavor and are very satisfactory. I remain, etc.

ALBERT MOROT.

Castle Costecalve, Dominion Dordogne, March 20, 1900.

Dear Sir:—During my last wine harvest I have employed your glucosides, also your Sauterne, and Champagne yeasts.

Before I would communicate you the result which I have obtained, I wanted to have the advice of a party who is usually one of the judges in wine tasting, at wine fairs and county fairs, in my neighborhood.

I have submitted to said expert the white wine not yeasted of my last harvest, and the white wines treated with your yeast and glucosides.

All these white wines come from white leaves and white Semillons, mixed for the press in equal proportions.

The expert has valued the cask of white wine not yeasted at \$14.

The cask yeasted with your Champagne yeast at \$15, and the cask yeasted with your Sauterne yeast at \$17.

Further, the expert stated nothing but a little sweetness was missing in this last wine to make it equal to Barsac, and by a small addition of sugared juice it would have been very sensibly altered.

I have used your yeasts ever since they were to be had by wine growers, and have always been satisfied, particularly on account of the increase of alcohol and flavor.

I have yet on hand red wine yeasted Margaux in 1893 of exceptional quality, highly superior to those I got before the Phylloxera crisis.

It is true that the restocking of my vineyard provided me with Cabernets and Merlots, but, thanks to these vines of the Gironde, my wine has more fineness; the superior qualities, though, it has acquired is owing to the employment of selected yeasts.

I hold that your new glucosides have developed a more de-

cided flavor than when your yeasts are employed alone, and while I have no more wine of 1899 yeasted only, I cannot make comparisons.

I intend, though, to rely on next vintage for a complete experience, I remain, etc.,

O. TAILLEFER,

Ex-Deputy de la Dordogne.

Aux Riveaux, March 8, 1900.

Dear Sir:—I hasten to inform you of the good effect of your selected yeast and glucosides, since two years I use your yeast, and in 1899 yeast and glucosides combined for red wines.

After five days in the vat perfectly clear, and above all of a fine color, worth at least \$2 more per cask than my neighbors' wine. Of white wines, of which I have drawn off for the second time, I can state nice flavor, 10° to 11° alcohol.

I have used your yeast exactly as you direct.

I can state that for \$8 spent, besides the other advantages, \$20 profit and more are made. I remain, etc.,

DURAUDEAU,

Proprietor and County Attorney.

Vesigneux, Nov. 29, 1900.

Dear Sir:—Since six years I have used each year your yeasts on grapes from various counties.

I can tell you, I am highly satisfied, and I have given these wines to many people to taste, who were all so very astonished at the results obtained. I remain, etc.,

A. MOUROT.

Montelimar, March 14, 1900.

Dear Sir:—In reply to your favor of February 17th. I use your yeasts since a number of years and have always had good success.

The clearness shown in drawing off is already immense.

Regularity of fermentation, increase of alcoholic strength, and over all, improvement in flavor.

My wines are Aramon, Syrahs and Durifs, mixed with a certain quantity of Clintons and Othello's, the foxy taste of which comes very near zero when Margeaux or Bojalais yeast is employed, but I found the last mentioned yeast adapts itself the best.

My last tanks' contents is composed of wines of late ripening grapes, Herbemont and Cuningam, the flavor of which is absolutely perfect, the color a little weak but greatly improved. Yours, etc.,

E. LEFEBVRE,

Uzes, Feb. 19, 1900.

Dear Sir:—I have the honor to tell you that your Margeaux yeast, which I employed at the same time as your glucosides, gave me a very beautiful and quick fermentation; my wine when I drew it off showed a lively clearness and ½° more alcohol than the one not yeasted.

The flavor is much better. The wines on which I have used your yeasts and glucosides were Scamon, Carignac and many others. I remain, yours, etc.,

A. BRUNEL.

Castle Plaisance, Ciorac de Blaye, Nov. 25, 1899.

Dear Sir:—I transmit my appreciation on the experience which you have made on me this year, with the selected yeasts and glucosides.

Pasteurized wines treated with your Chablis yeasts and glu-

considers have a very pronounced flavor, which perfects nature. These wines do not resemble those which have not been thus treated.

Wines treated with your Chablis yeasts and glucosides have a pronounced flavor, but not so pronounced as the pasteurized wines.

Wines treated with Barsac yeasts and glucosides show a great improvement over the marked wines, but actually it is not so apparent as the Chablis, the type of Barsac wine approaching nearer the country wine than the Chablis. I remain,

E. BERTIN,

Chateaux Roux, Feb. 28, 1900.

Dear Sir:—I have used your yeast since 1895, and the results I have obtained are highly satisfactory.

Particularly yeasts of Beaune and Chambertain, of which the results are very appreciable.

The juice on which I used these last two years comes from Pinots, Gamay's & Cots.

The flavor is stronger than in the wine of those vines where your yeast was not used, the fermentation superior, more regular and active.

I have tried your glucosides with Romane Conti yeasts.

Now, I can tell you that the flavor is much stronger than in the wine made of the same grapes simply yeasted.

In conclusion, I hold that the employment of your selected yeast present the following advantages: Quick and regular fermentation, increase of flavor, rapid clearing, strong superiority over many years in the average of wines made of non-yeasted juice. I remain yours, etc.,

E. BONIDAIZE,

Nancy, Dec. 27, 1900.

Dear Sir:—The selected yeasts have produced an excellent effect on my wine-making, and the red wine is extremely fine. YOU RENDERED THE GREATEST SERVICES TO THE WINE-MAKERS, who will understand you. I remain,

P. WURSTHORN,

Proprietor at St. Max.

Martizay, Feb. 22, 1900.

Dear Sir:—It is a sure fact that the use of your glucoside extracts of leaves, mixed with your selected yeasts, give a magnificent result, particularly in our section, where the wine does not keep.

The fermentation took place within 48 hours; we draw off usually the fifth day, and the wine is very clear.

I can certify that it keeps very well, also the flavor increasing in proportion as the wine ages.

We use the selected yeast Romanee Conti. We remain,

WIDON E. CRON.

La Chatre, Feb. 22, 1901.

Dear Sir:—After a first trial my feelings are that your glucosides constitute a precious discovery.

I believe that the future will confirm this opinion.

I obtained by the allied employment of glucoside to corresponding selected yeasts, a very encouraging result.

The flavor which it imparts under the said conditions is more pronounced than with the selected yeast alone, and the

clearness of the wine, thanks to their co-operation, appears to me increased.

The future experiences will permit to determine exactly the quantities to use for every 22 gallons.

This remark comes from the following: I put in 132 gallons of lively red wine the quantity you prescribe for 220 gallons.

I have found at the test made after the first drawing off, a small excess of acidity, which seems to me weakening for the balance.

I believe it will disappear on the second drawing off.

I have used for a Gamay & Pinot juice the new yeasts and glucosides, Romanee Conti, for a Cabernet Sauvignon yeast, the new selected yeast and glucosides of Margaux. I remain, etc.,

J. PILLIOT,

President of the Wine-Makers' Syndicate of Chatre.

St. Radegonde, March 30, 1900.

Dear Sir:—I employ your yeasts since 1893, and your glucosides since two years. In expressing you since some years my satisfaction on the subject of yeasts, I tell you that henceforth no more wine will be made by me without that they are used in it.

To-day I will testify to you my satisfaction, and congratulate you to have received such a success.

As to the results obtained, I quote you:

1. Increase of strength of alcohol.
2. Quicker clarification.
3. Heavier dregs (settlement) and shorter lapse of time.
4. Increase of flavor.
5. Wine plainly benefited.

I remain, etc.,

BESSON.

Mayor's Office, St. Hilaire de Brens, May 25, 1900.

Dear Sir:—I can tell you I am exceedingly satisfied with your glucosides this year.

I had an absolute notable improvement as to the perfume and the wine so treated.

Furthermore, since 6 years I use your selected yeasts, and each year I had proofs. I had always had very sensible improvement in the quality of wine.

The years are not alike. I mean by that, that I had years when the improvement was more marked than in others, but always there was one.

I believe your glucosides will be yet more of a perfection, and as to me, I believe it a duty to recognize it. I remain,

CHARLES GIRAUD,

President of the Agricultural Society and Wine-Growers of Canton, Cremien.

City of Montmiry, Feb. 19, 1900.

Dear Sir:—Since a long time I have used your selected yeasts and am very satisfied.

I use it for its direct efficiency to take off the foxe taste.

Every year the best part of my crop has been put aside to make a table wine for my customers, and it is on that vintage coming from Gamays, Black Beaujolais, that I use your yeasts on Chambertin.

Even when the vintage was over ripe, I have succeeded perfectly to obtain a superior table wine. Your selected yeast

improves that wine very much. Anybody will yet find, in three or four years, the taste originated by the yeast.

I yeast equally my white table wines, and even my sparkling wines, White Pinots, with your selected Bouzy yeast, and have perfectly succeeded.

PETER GRAVELLE,

Register of the Baron d'Aligny.

Clauve, March 28, 1900.

Dear Sir:—I have used in 1898 21-5 pounds of Muscatel selected yeast, and 21-5 pounds Chablis selected yeast on white wines. The result was good with the selected Muscatel yeast, but still better with the selected Chablis yeast. The two pieces which were treated with the last yeast have realized \$5 each more than untreated wine.

This year I have used 50 pounds of selected Chablis yeast, divided up among 30 casks, in addition to 10 pounds of glucosides Semillon. I got by it remarkable wines, as well as to color, as to fine yield and richness, and flavor. I owe it to truth that certain pieces have given better results than others, but in general, I will not do hereafter without your selected yeasts and glucosides.

They, as I have found out, give body and flavor. I remain, etc.,

I. BOUVRON,

Grape-Grower.

La Chapelle, March 15, 1900.

Dear Sir:—Since a long time I have intended to inform you of the benefit done to my wine (Othello pure) by the use of your glucosides, St. Emillon and selected yeasts.

The results exceeded my expectations. One can state truthfully that your products cause not only life in fermentation, and increase of alcoholic strength, but have given a considerably increased value to my wine, and IT IS TO YOU THAT I AM INDEBTED FOR THIS BENEFIT, for which I thank you sincerely.

As I have made only one trial of your goods, I can't say any more. I remain, etc.,

M. SIREYJOL.

Les Murets Guerin par Bauglon, April 4, 1900.

Dear Sir:—In reply to your favor of Feb. 19, here is the result I got from the use of your glucosides. I tried them on very common wines, of which I thought they ought not to pass for something extra fine, but they were really greatly improved, the fermentation was very quick and took less time than those of non-yeasted wines; on drawing off the wine was brilliant to the hour when I pen these lines, when the wine has been drawn off.

I have delayed to reply for the purpose of telling you, that a month after the drawing, how the wine keeps. It is superior to the others. I remain, etc.,

R. NADEAU FILS.

Castle Magne, March 20, 1900.

Dear Sir:—First I assure you in what concerns me, on the clearing of wines treated with your glucosides and selected yeasts.

I have kept myself strictly to the directions given in your printed notices. The wines so treated have a quick fermentation, more complete than others (for many wines not yeasted this year the fermentation has been very slow, irregular, and I dare say, laborious, and the wine in many cases has clar-

ified very slowly), and the clearing has also quickly taken place.

As to flavor and other qualities arising from the use of your selected yeasts and glucosides, they have justified to the day what I have believed I am entitled to expect, and will continue, as I have the firm hope, and cannot express myself in other words, till I have given you my new order. I remain,

PERRAULT.

Lauenville, March 6, 1900.

Dear Sir:—In reply to yours of 22d inst., I enjoy the satisfaction of giving you results obtained by the use of your yeasts and glucoside extracts of leaves.

I have delayed, as I wanted to be exact in my results.

This year I have used your glucosides on Gamay grapes, the commonest plant we have got, and treated one part with glucosides, and another part with yeast only.

Here is the difference: in the first case the wine showed 10.2 to 8.03 degrees in the other.

You may judge of my great astonishment at such an improvement.

As to the fineness of these wines and their clearness, the wine treated with yeast and glucoside has incomparable brilliancy and taste, calling back exactly the origin of the glucosides. The other wine made with your selected yeast is very good also, is very clear, but cannot be compared.

I have used the Gamay yeast with glucosides Ry, champagne and have bottled these wines for some time. They improve very quickly in flavor and could not be recognized again. The conclusion is therefore that a simultaneous use of your selected yeast and glucosides gives the most satisfactory results.

Since 1892 I have begun to use your selected yeasts, and have always done well by using them.

Already in 1896 I have treated the vintage coming from vineyards with northern exposure, and have received a uniform wine of quality equal to that coming from better sites. That year I had employed selected Beaujolais yeast for red wine and Chablis yeast for white wine, in 1898 same results with selected Gamay yeast, but never did I have a difference of almost two degrees as in 1899. The glucosides can be considered as first class aids to yeasted wines.

I wish ardently that this information prove its utility to your readers and customers. I remain, etc.,

PAUL HORIOT.

Bayou, March 5, 1900.

Dear Sir:—The results I have obtained by the use of your glucosides, combined with your selected yeasts Burgoyne, are excellent; the quality is superior as to fineness of flavor and brilliancy.

Unfortunately, our vineyard's products are generally refractory to this treatment, which, notwithstanding, makes its product more easily salable. I remain, etc.,

PAPELIER CORDEL.

Bizous, March 22, 1900.

Dear Sir:—In reply to your favor of February 25, I can, and ought to, confirm that without your selected yeast my table wine would not have been such a success, as the conditions of

the climate are unfavorable to the ripening of the grapes, even in a dry summer like the last, as well as to the fermentation of the grape cake and juice.

Thanks to your yeast, of which I make the yeast bath in proportion to my amount of grapes, as per directions given by you, including the barrels.

I get a cheap wine of 5 to 6 degrees, which, notwithstanding, keeps well and improves every day in the year.

A load of 150 pounds has given me white wine for a barrel of 30 quarts.

Yeast used, one pint only; the other pint I gave to a brother priest, who has used it on a similar quantity with his grape cake, which did not seem to ferment.

In his presence I have drawn it off once, and definitely little settlement; superb gold color, perfect clearness—these two qualities were already produced at the time of drawing off from the barrel after the fermentation, which has lasted three days and which commenced the evening of the first day within five hours after placing it in the bucket.

My colleague, who tasted it on drawing it off from the barrel, was astonished by the taste, flavor and quality of this wine.

I recognize your invention by passing your booklet every year to my friends amongst the winemakers. I remain,

J. M. AMARE (priest).

Charceune, October 4, 1899.

Dear Sir:—I have been always very satisfied with your yeasts. It is five years since I used the same, and the results are perfect. And last year the Noah wine, which I have yeasted and to which I have added a little honey to give it spirit, fools the biggest experts. The foxy taste has totally disappeared, and a short time after the vintage people take it for old and aged wine. I remain, etc.,

E. MILFARENT, Grape-Grower.

St. Sorlin, March 2, 1900.

Dear Sir:—Summing up, I will continue as in the past to use your selected yeast. That's my advice, and the highest praise which can be given. I remain, etc.,

L. BRYANT.

Noel sur les Aubiers, March 21, 1900.

Dear Sir:—I am enchanted of the results obtained this year. Before I used your selected yeast, my wine was inferior on account of the poor soil, which is not of such quality as to produce good wine: but, thanks to your selected yeasts, the quality of the wine has been changed.

I was highly satisfied, but this year when I used your glucosides, the result is perfect. Really, I am highly content.

I dare not make any more wine without using your selected yeasts and glucosides on my grape harvest.

You can depend on me to order the selected yeasts and glucosides, which have given such a delicious flavor to my wine. I remain,

L. PAPINEAU RIPOCHE.

Avignon, June 8, 1899.

Dear Sir:—I met with a success which I am happy to share with you, for your fine selected yeasts have caused it.

At the competition of the district, held from May 6 to 14, the Secretary of the Agricultural Department, accompanied by the Secretary of the Treasury, has presided.

Everything was at the Fair—agricultural implements in quantities, all kinds of animals, splendid wines, etc.

And the wines of the writer have received the GOLD MEDAL. You know since years I used some of your selected yeast that has furnished me the high reward the jury has bestowed on me.

A share of this honor belongs to you, and I thank you. I remain, etc.,

JULES JOULIE,

Wine-Grower, mainly of American wines.

Viletta, June 3, 1899.

Dear Sir:—Your selected yeast is a wonder. It is impossible for me to believe that there is a single wine-grower in France or elsewhere who does not use it, except those who never heard of it.

My wine is a real Burgoyne (fine French red Burgundy), well kept.

Wines not yeasted stand no comparison with those yeasted.

I have no words flattering enough, appreciative and thankful for you. I remain, etc.,

PEDRO RISO (Paraguay).

Auldana, Australia, April 4, 1899.

Dear Sir:—I have tried this year your selected yeast on a number of barrels. I am highly satisfied. The earthy taste so marked in the Australian wines has completely disappeared.

The results were best on 50 barrels of which the juice was pasteurized.

I was afraid the selected yeasts would deteriorate or suffer in transit from the great heat, but they have worked well. In future I will order largely. Yours,

E. MAZURE.

Virien, C. G., March 4, 1901.

Dear Sir:—I am highly satisfied with the trial given this year to your glucosides, with your selected yeasts.

I made about 90 casks of red wine and 50 casks of white wine.

For red wines I used Beaujolais yeasts and glucosides, and for white selected yeasts and glucosides (the champagne).

The results were excellent—quickness of fermentation, brilliancy, and fineness of flavor, particularly in the white wine.

Pressed October 2.

Clear October 12.

Drawn off, fine and clear, November 17.

You can rely on my trade in future. I remain,

L. JURRON.

Monosque, March 2, 1901.

Dear Sir:—I am in luck to use your yeasts. The best proofs are my yearly orders to you.

By using your selected yeasts I obtain a rapid and complete fermentation, and more alcohol than if made in the old way.

In drawing off distinct clearness and pronounced flavor.

In conclusion, I am highly satisfied of the system, and will continue to use it. I remain,

REMY MAGNY.

Bourg St. Andeol, March 7, 1901.

Dear Sir:—Since years I use your selected yeasts. Am satisfied with the results obtained, and make my friends use them, too. I remain,

CH. CARSIGNOL.

Peyriac, March 10, 1901.

Dear Sir:—I have to tell you that I have been always satisfied with the selected yeasts Chablis or Champagne for the white wine, and Romanee for the red. I remain,

DE POUTHON.

La Barre, December 31, 1900.

Dear Sir:—I am happy to tell you that I have remarkably succeeded this year.

My wines have 2 or 3 degrees alcohol more than my neighbors, and the taste is perfect. I remain,

COUNT DE COUSIN DE LA TOUR FOUDUES.

Daglan, March 12, 1901.

Dear Sir:—I use your selected yeast and glucosides since two years, and obey your directions implicitly.

I am entirely satisfied with the result obtained.

Before I used your selected yeasts it happened rarely that when the heated term came any casks of wine remaining on hand would not turn. They don't change any more.

Last year, having used your selected yeasts and glucosides, my wine kept clear and brilliant all summer.

The wine I made this year is brilliant, of a flavor and fineness far superior to the wine before I used your selected yeast Margaux. I remain, etc.,

MIERMONT.

Vergeze, February 28, 1901.

Dear Sir:—In reply to yours of the 26th inst., I have the honor to inform you that in using your products I got a much quicker fermentation, and a greater clearness on drawing off.

As I sold my wine on drawing off, I cannot say more. I remain,

LOUIS RIVIERE,

Member of the Jury, Paris, 1900.

St. Laurent, March 2, 1901.

Dear Sir:—I am highly satisfied with your glucosides for my white wines, as with that product a wine maker who attends to his cellars can accomplish wonders.

I will order in future same as in past. I remain, etc.,

JEAN LOUIS TROUCHAUD.

Levignac, March 2, 1901.

Dear Sir:—I congratulate myself for having used since 3 years your selected yeasts, and I am eager to recommend the same.

The quickness of the fermentation, the clearness when drawing off, the increase of alcohol, and above all the flavor, have given me a real superiority over the wines of my neighbors, and have enabled me to get \$6 for 22 gallons.

This year in spite of underselling I have sold all, and got from \$4.50 to \$6.25 for 22 gallons.

I have always used the selected Margaux yeast. I remain,

DASQUE, Notary.

Dax, March 7, 1901.

Dear Sir:—It is now 8 years since I have used your selected yeast for the fermentation of my wines, and have done very well by it.

By the use of your selected yeasts I obtain a more active fermentation, more regular; a winish, very agreeable, odor, disengages itself from the juice, the wine gains in alcohol, clears promptly, and shows later the fine flavor of the glucosides used.

These are the results which I have had every year.

Last year I have used I believe selected Cabernet and Sauvignon yeast and glucosides for the fermentation of red wine only.

I have got a very satisfying result, my wine is very good,

very clear, better than the preceding years, and the flavor has begun already to develop.

As to my white wine which I did not yeast this year, it is weaker than the preceding years, notwithstanding that the juice was very rich in sugar, from which I conclude that I was very wrong not have used the selected yeasts this year for the fermentation of this wine. I remain, etc., DATCHARRY.

Le Cosean, March 8, 1901.

Dear Sir:—I had, like every year, entire satisfaction from the selected yeast I have used. My wine, notwithstanding the great quantities of damaged grapes which we had this year, has cleared very rapidly. I remain, etc., C. CHEMIER.

Balbiguy, March 8, 1901.

Dear Sir:—I find on my desk your favor of the 19th last. In reply to which I did not reply before, for I wanted to see how the wine does in aging.

To-day I can tell you that the trial has been very satisfactory. Drawing off the first, we found a great difference between the wine treated and not treated in taste, which it never had before, and this difference increases as the wine ages.

To-day no expert even will believe that the two kinds of wine come from the same kind of grapes.

The wine which got the glucosides has a delicious flavor which increases daily.

This year I will make a new trial on a larger scale, and if it succeeds as well as the one of 1899 then the experience is conclusive.

Tell those who use the glucosides to keep the wine about a year, for after 8 or 10 months the improvement is very great. I remain, etc., THE COUNT M. DE POUCEUS.

La Pailly, March 5, 1901.

Dear Sir:—In reply to your favor of the 25th last. Since some years I avail myself of your product, and can only congratulate you to same.

With your selected yeasts I obtain second wines of such beauty, clearness, and of free relish which keep very well.

In a word, I get wines now of fine quality which keep very well, and you may be convinced that I will work to make your goods known.

Next season I will send my orders in time. I remain,

HENRY RACINE.

Lyon, February 28, 1901.

Dear Sir:—In reply to your favor of the 25th inst.

Here at Lyon of my small vineyard I got 700 gallons of wine which would be unfit to drink, but thanks to your selected yeasts and glucosides, it is good.

For during the vintage it has rained, and the grapes which were not damaged by the hail, were soaked so much that the wine does not at all resemble the wine of former years.

I believe that without the use of your selected yeasts and glucosides the wine could not be kept at all.

It is good to drink, and clear. I remain, etc.,

R. RADAISOU.

RESULTS ON CIDER.

St. Nicol Farm, March 4, 1901.

Dear Sir:—This is the first year I have availed myself of your selected yeasts for making of cider.

I have used sundry kinds, but your selected yeasts of Champagne, added to the glucosides, have given me a cider superior to all others, and of which the fermentation came out in good condition. I remain, etc.,

G. ANTON MAY.

Plouigneau, March 3, 1901.

Dear Sir:—I have the honor to inform you that I have used with great success your selected yeasts.

The fermentation has been quick and regular, and I have the pleasure to state to-day that after drawing off, my cider is of such clearness, and absolute transparency and brightness that I ask all my friends to follow my example. Yours, etc.,

College St. Augustine,

FOURNISS.

Vitre, March 1, 1901.

Dear Sir:—Like last year, I am very happy to state to have used your new glucosides with the selected yeasts, and cannot but congratulate you heartily.

I took this year for the ciders the selected yeasts of champagne.

I prefer to use those Vallee d'Auge, for they give a more fascinating cider, without counting the qualities coming from the selected yeast in general.

A. AURELINE,

Farm Manager of the College.

Doruaïne de la Barillerie, November 21, 1900.

Dear Sir:—Please send me, like every year in great hurry, 7 pounds of selected yeasts for cider of the best plants Vallee d'Auge, same yeast as every year.

I have been always highly satisfied with your yeasts, and my cider has a wonderful reputation.

As it is really excellent, I have never enough for my friends who want to use it. I remain, etc.,

AMEDEE MESLAY.

Saint Lo, March 12, 1901.

Dear Sir:—I enjoy the satisfaction to inform you that the use of your selected yeasts has given me wonderful results.

Quick and complete fermentation. General superiority over cider made in the old way. Those are the observations I have made in a few months, and to state which to you gives me great pleasure. I remain,

A. GUILLON.

Arquian, March 10, 1901.

Dear Sir:—In reply to your favor of the 26th ultimo, I hasten to write you the results I have obtained.

It is the first time I have used your selected yeasts and glucosides in the manufacture of cider.

For one lot I used your selected yeast alone. The result is good, the cider is superior to that not yeasted.

On the other lot I have used your selected yeast and glucosides, and the results were still better, as I had no spirit measure on hand I have to guess at the degree of alcohol, which must be though stronger than the one yeasted only.

I regret not knowing anything of your selected yeasts and

glucosides before, but promise you that in future no more wine or cider will be made by me without using these products.

This year even if there is only a small harvest I expect to have some friends uniting with me to use your yeasts.

As I am an up to date man, I have prepared the yeast as you direct in your book IN PRESENCE OF THE PUBLIC.

THEY THOUGHT I WAS A FOOL, BUT WHEN A FORT-NIGHT AFTERWARD, THEY TASTED THE CIDER, THEN THEY CHANGED THEIR OPINION. THEY THINK NOW I AM WISE. I remain, etc.,
JULES MORIGAULT.

Orleancourt, March 5, 1901.

Dear Sir:—In reply to your favor of the 28th inst., I must state that I am highly satisfied with the use of your selected yeast and glucosides.

The fermentation is very active and the cider very clear.

It keeps much sweeter and the flavor is superior to the cider which has been fermented without yeast. I am, A. FUIET.

This is only a small part of the very many flattering testimonials received. The size of this book prevents me printing any more.

How to use the selected yeast and glucosides of fine vines.

To obtain the greatest improvement of wine, in the usual way wine makers work, ONE MUST BE PENETRATED by the idea THAT SUCCESS depends and the principal difficulty CONSISTS in the rational correct working, which consists OF GETTING THE FERMENTATION PURE.

All efforts must tend to obtain a unique fermentation under the influence of the selected yeast.

If the natural ferments of the grape develop equally with the chosen selected yeast, a poorer result is obtained on account of the savage cells peopling the juice.

On one of the last pages there is a list of the selected yeasts.

The selection of the race of yeast is of importance only as to the kind of flavor, for as far as the other qualities are concerned increase of strength of alcohol, clarification, etc., all our yeasts well employed procure the desired results, as they our yeasts are always composed of the most vigorous races with the complete expulsion of parasite races.

Of course Burgundy yeast ought not to be taken for Bordeaux, and vice versa, except in exceptional cases.

SELECTION OF YEASTS.

The Burgundy and Bordeaux yeasts produce the greatest improvements in red wines, particularly I advise to use Romanee and Margaux yeasts.

After all the information resulting from 10 years' trial we have found it is the Romanee yeast which is usually the best for all red wines.

For white wines Chablis and Sauternes give always good results, as well as the sundry Champagne yeasts.

For wines which have a flavor particular to themselves, selected yeast ought to be chosen as near as possible to that particular flavor, nevertheless the races stated ally themselves often, and strengthen the natural taste in mingling themselves.

In Southern France the Romanee yeast has given best satisfaction and flavor to red wine.

To regulate only the fermentation of southern wine, use yeast

Aramon, yeast No. 97, but better alcoholized yeast No. 118, which has an extreme vigor and stands high temperatures.

It is the kind which gives the strongest elevation of alcoholic degree.

For wines of American vines choose yeasts of marked, pronounced flavor. It is good to mix it with half alcoholized yeast.

The alcoholized yeast alone gives very good results in this case, for it opposes quicker than others the proliferation of the natural grape ferments.

When it is not desired to change the particular taste of a wine employ our special alcoholized yeast.

This yeast has the quality to regulate the fermentation, and to increase the strength of alcohol, and to render the natural flavor finer and more delicate.

METHOD OF USE ORDINARILY (WITHOUT GLUCOSIDE).

In awaiting the employment of the yeast the tin cans with the fastenings intact ought to be preserved upright in the case.

We should at the moment of employing it shake the can in order to put in suspension the ferment which is deposited in part at the bottom of the nutritive liquid, and when the latter will be seen we should rinse the can with a little juice in order not to loose the yeast adhering to the can.

The pure yeast ought to be employed immediately after the pressing, so that the natural ferments of the grape may NOT have time to begin their action.

In regions where they have the habit of piling up the grapes or even of allowing the natural fermentation to begin some days before pressing (be it well understood) it is necessary to diffuse the yeast bath on the grapes themselves according as they come from the vine. In order that this may be selected yeast bath is shaken only on the berries which are crushed during the piling up.

In temperate regions of France we are able to diffuse the active yeast in the vintage without any other special manipulation, only taking to divide it as well as possible by coating in such proportion as the crushed grapes are thrown into the tub.

NEVERTHELESS THE MAKING OF THE YEAST BATH, as it is called farther on, IS PREFERABLE, and AVOIDS ALL CAUSES OF LOSS, and it is absolutely indispensable in cold weather.

Two pounds of pure active yeast is sufficient for 175 to 220 gallons of wine. This first method of use has given good results, but if one wishes to obtain the greatest effects of which the yeast is capable, it is necessary to employ the method of yeast bath which has given complete satisfaction in the wine crops of 1891 to 1899.

In cold seasons to obtain a very rapid fermentation I also recommend operating by yeast bath.

In cold weather we must take care to heat the grape juice lightly to make the temperature of the yeast bath from 25 to 30 degrees Centigrade without ever passing over this last temperature.

Then preserve the yeast bath in a warm room at a temperature of 15 to 18 degrees Centigrade, for use 2 or 3 days after the preparation.

An yeast bath thus prepared will be easy to ferment in case of a cold vintage.

Two and a fifth pounds of pure yeast is sufficient to improve from 330 to 550 gallons of wine.

But it is clearly evident that the improvement will be much greater, however, if the yeast is used more concentrated.

It will pay to use two and one-fifth pounds of pure yeast for 44 to 130 gallons of pure wine only.

PREPARATION OF YEAST BATH.

We prepare yeast bath 2 to 3 days to even 4 days before the vintage.

There are three methods to get a good yeast bath, the first two being the best, because the third, although more simple in appearance, needs more care.

Nevertheless the third is used the most in temperate regions, and gives excellent results there.

For the south and all warm regions I advise either of the first two methods.

I ought to begin by warning the wine makers against the advice given by certain authors, who recommend heating to a temperature of from 60 to 70 degrees C., only the juice marked out for the preparation of the yeast bath. This temperature, which is sufficient for destroying the bad ferments in wine on account of the presence of the alcohol, is absolutely delusive when it is acted upon with a juice which is not fermented.

In fact at 60 degrees C. certain microbes are not restrained or even paralyzed for a number of hours, and they regain life before the restoration of the yeast. In order to actually sterilize wine it is necessary to make it boil, but it is not necessary to submit all the juice which is to be used for the preparation of the yeast bath to the boiling process.

PRACTICALLY IT IS SUFFICIENT TO STERILIZE A SMALL PORTION OF THE LIQUID, WHERE THE YEAST WILL BEGIN TO WORK, because when this will be in its greatest activity one is able to feed without fear with unsterilized juice.

First method of preparation.

FOR YEAST BATHS.

To be used in the south and hot regions.

This method consists of two parts.

Part I.—For each 21-5 pounds of yeast prepare 2 quarts of grape juice, to which add two quarts of water. Boil these 4 quarts of fluid to a thick soup on a lively fire in a very clean basin (stew or saucepan). Care must be taken that the liquid looses not more than one quart, and when that point is reached it is withdrawn from the fire as soon as the vessel contains only three quarts.

This boiling liquid is diffused in the yeast barrel carefully to avoid breaks, in case a glass vessel is used instead of a barrel to make the yeast bath in.

Then wait for a few hours, say from evening till morning, before adding the yeast to the juice, say until the temperature has fallen below 35 degrees C., for the yeast bath will be paralyzed if thrown into a hot fluid even if it were heated a little more than 40 degrees C., which seems to be luke-warm only.

The best temperature to make the yeast bath is between 20 and 30 degrees C.

Obey exactly the directions given, a little later carefully carrying to the receiving vessel or cask receiving the yeast bath, and close it in preference with an air purifier.

In default of an air purifier use a clean linen (or cheese cloth).

Then wait about two (2) days until the fermentation shows nicely, which can be seen by the evolution of gas bubbles through the purifier or by the smell of fermentation, or when the stirred liquid begins to foam and lets carbonic acid gas escape.

That this beginning of fermentation declares itself as quickly as possible, the vessel (barrel) ought to be kept at a temperature of a warmed room, say about 20 degrees C., when the weather is fresh.

Generally one places the yeast bath vessel in a kitchen, neither too near nor too far from the fire, by which the right temperature is kept up.

Lacking a place with the correct temperature, the yeast bath must be warmed up, taking care that the temperature does not exceed 30 degrees C., by covering with warmed cloths moistened in boiling water.

On the other side in the heated regions of the south the yeast vessel is placed in a cellar, the temperature of which ought not to exceed 35 degrees C. Self understood, this operation must not be carried on in a smoky room, but remote from stables.

Part II.—When the fermentation of the three quarts of liquid to which has been added 21-5 pounds of selected yeast has commenced, and which happens generally the second or third day, one adds to this yeast bath 8 or 10 quarts of grape juice pressed out at the same moment.

Be careful to use only sound grapes for this purpose, of which every mouldy or earthy berry has been removed.

This juice obtained by pressing the grapes through a proper sieve or bolting cloth, must be immediately added to the yeast.

I INSIST ON THIS POINT, for when this juice is prepared even only two hours in advance in hot weather, the savage ferment cells increase in an imperceptible way at first, but sufficiently to counteract the result.

Soon after this addition shake strongly the yeast bath vessel, of which the capacity has always to be enough to leave a free space of one-quarter of the hole, and one waits yet 24 hours before using it, as later indicated.

In this way a very pure and active yeast is obtained. Also for 22 pounds yeast one takes 20 quarts of grape juice, 20 quarts of water, and lets it boil till reduced to 30 quarts, and after cooling off only the 22 pounds yeast are introduced.

Allow the fermentation to begin, then add 80 to 100 quarts of grape juice pressed out at the same time.

After 24 hours one can use these yeast baths, finding it in clear fermentation.

SECOND METHOD.

YEAST BATH WITHOUT GRAPE JUICE.

Applicable in all regions.

For 21-5 pounds of yeast take 12 quarts of water, 21-5 pounds sugar, 20 grammes tartaric acid, 20 to 30 grammes nourishing salts.

Boil this syrup for a few minutes and let it cool below 35 degrees C., then and then only introduce the yeast at once.

The YEAST would be PARALYZED in too HOT a LIQUID, WE CANNOT REPEAT THIS TOO OFTEN.

Then act as prescribed in the first method in all that concerns the temperature of the place where the work is done, and if possible use an air purifier.

This yeast bath is to be employed only when it is in clear fermentation, which sets forth about the third or fourth day, according to the temperature and shows as in the first case, except that the foam is less apparent when this yeast bath is agitated.

Of course for different quantities of yeast proportionate quantities of sugar, water, etc., are to be used, say, for example, for 22 pounds of yeast take 120 quarts of water, 22 pounds of sugar, 200 grammes tartaric acid, and 200 to 300 grammes nourishing salts.

Boil, then introduce while boiling in the barrel and let it cool off from one day to the next before mixing the yeast with it.

Then do not use that yeast bath before it is in plain activity, which will be in about 3 or 4 days, according to the temperature.

While glucosides can be boiled with the sugared water, only do not introduce the yeast before the LIQUID IS COOLED OFF!!!! below 35 degrees C.

THIRD METHOD.

Applicable in all regions, particularly the temperate ones.

This is the one most employed, and although it is not as good as the preceding ones, nevertheless good results have been obtained by it, particularly in temperate regions, where nothing prevents to continue its use.

But for hot regions I advise the preference of one of the two first methods, as they avoid the proliferation of the natural ferments in the yeast, who can produce themselves in the grapes of which the juice has been extracted, aided by the broken berries already in natural fermentation, as it happens in Southern France.

This third method consists of the following:

Prepare the yeast bath 2, 3 or even 4 days before the vintage.

Use for each 21-5 pounds of selected yeast the juice of 45 to 55 pounds of grapes, fresh pressed.

Where good spring water is at hand or pure well water far from every source or cause of contamination, as dung heaps or the like, it is advisable to use it to clean the grapes intended for the yeast bath of all impurities and wild ferments which they carry on their surface.

BUT if the water without being bad is doubtful, it must not be used, for it would introduce bad microbes into the yeast bath.

In similar cases the grapes must be carefully selected, taking off all berries soiled by earth or otherwise crushed or damaged, and then you can use the grapes then without washing in working as I will describe:

Crush these grapes quickly, separate from the pulp by a sieve

(say a barley sieve), carefully scoured; mix then this juice in a very clean cask free from odors and smells with the quantity of yeast necessary, and let it freely ferment to the time of employment.

The following is a list of the quantities for this method:

222	gallons.	2 1-5	pounds	yeast.	22 to 27	pounds	grapes.
440	"	4.4	"	"	90 to 110	"	"
550	"	5½	"	"	110 to 132	"	"
660	"	6.6	"	"	132 to 165	"	"
2200	"	22.2	"	"	420 to 525	"	"

This yeast bath ferments under the influence of the yeast in about 50 to 60 hours after the beginning of its preparation, and is used to distribute during the crush of the grapes.

When there are no grapes of good quality on hand, nor good spring water, it is advisable to heat the juice to the boiling for a few minutes.

After having added before heating about one-tenth part water to avoid the disadvantage of a condensed product by boiling, let it cool off then below 35 degrees C., for the yeast will be paralyzed by putting it in hot grape juice. See first method before.

HOW TO USE THE YEAST BATH.

Do not use the yeast bath until it is in plain fermentation.

Begin by shaking or stirring strongly the yeast bath in the barrel prepared, 2 or 3 days before to prevent any settlements (which contains a great deal of yeast) of the juice forming the bath.

Put a little of the yeast bath on all the different utensils, say vats, barrels, presses, etc., using it during the transport, pressing, etc., about one-third being used for these purposes, the other two-thirds are used as follows: About one-sixth is placed on the bottom of the barrel or vat, before beginning to pour on the crushed grapes the balance is put in successively in layers proportionately.

The last part is poured out on top of the contents.

When the grapes come from a distance they may be broken in course of transportation or at the time of packing.

It is necessary to sprinkle from the yeast bath as soon as possible after gathering by an apple sprinkler, for without this caution the wild fermentation begins and the action of the selected yeasts will be reduced and even annihilated in hot regions.

This last precaution is unnecessary in temperate regions.

To obtain very good results in the South and all hot regions it is indispensable to use the yeast bath with all the care which I advise, **FOR THE MORE CARE TAKEN TO PREVENT WILD FERMENTATION THE MORE COMPLETE WILL BE THE ACTION OF THE SELECTED YEAST AND THE GREATER WILL BE THE IMPROVEMENT IN THE WINE.**

VATS WHICH ARE TO BE FILLED IN MORE THAN ONE DAY.—Many wine-makers have vats of such size that it takes sundry days to fill the same. In such cases it is advisable to use the total quantity of yeast the first day, for the following days, as the vat gets filled, the mass is well mixed up.

WHAT TO DO IF THE YEAST IS PREPARED AND THE HARVEST DELAYED.—It happens that, on account of bad

weather or other causes, the harvest can't be made at the time expected. In such cases, if the delay is not more than two or three days, the yeast bath is still good enough to use; but if there is more of a delay, yeast baths older than five or six days should not be employed, counting from the beginning of the preparation, without taking care to feed the yeast.

For such on the fifth day one adds to the yeast bath 3 quarts of grape juice, pressed out at the same moment, with all the care previously stated, for every 21-5 pounds yeast before used.

Then the yeast vat must be strongly shaken to mix the whole mass.

From this moment the same addition must be made daily in place of juice. Sugar water may be used.

COLD VINTAGES.

Parties operating during cold weather must make a more abundant yeast bath. The best way is to prepare forthwith an yeast bath, as previously stated, in proportion of 10 quarts of juice or sugar water for each 21-5 pounds selected yeast, and keep it in a warm room. Then when it is in plain fermentation, increase the volume by a new addition of the same quantity of juice or sugar water, and after waiting then again a day or two use it if it is in plain fermentation.

TEMPERATURE OF YEAST BATH.

As the question has already been treated before, I insist upon the necessity, during cold weather, to make the yeast bath in a warm room, the temperature of which in no case is less than 15 degrees C., for even a temperature of 20 degrees C. leaves an yeast lively and well shivering.

At the same time, the danger is in too much heating the yeast bath, which would paralyze the yeast.

Consequently when the vessel containing the yeast bath is brought nearer the stove, it must be carefully watched, and prudently withdrawn from the stove when the temperature of 30 degrees C. is obtained.

The yeast begins to suffer when the temperature exceeds 38 degrees C., which is the temperature of the human body, and it will be paralyzed over 40 degrees C., except those of certain races which can stand the heat better and are not paralyzed up to 45 degrees C.

DIRECTIONS FOR PREPARING YEAST BATH.

When there is a small quantity of selected yeast to be prepared, or 20 quarts for 21-5 or 42-5 pounds yeast, use a glass vessel or stone jar or pitcher or bucket, previously scalded, so that it is scrupulously clean.

Take care always to cover the vessel in which the yeast bath is prepared with a white linen.

To prepare a large quantity of yeast use a barrel.

CARE TO USE WITH THE YEAST BARREL.

The barrel in which the yeast bath is to be prepared must be sound and free from every bad smell. It must be scoured thoroughly with boiling water before use.

Provided with a plug, faucet or spout, scalded to draw off the yeast bath, place it on timber in a room free from odors and distant from stables and manure heaps, the temperature of which must be no less than 15 degrees C.

When wine making is carried on during cold weather, place the yeast vessel in a room easy to warm.

Cover the bunghole with a proper linen, folded over to prevent the entrance of pollens (invisible), and wait at least two or three days before using the yeast bath.

SURE WAY TO KNOW THE BEST TIME WHEN TO EMPLOY THE YEAST BATH.

An air purifier placed carefully on the yeast barrel, all joints and open seams being well stopped up to avoid the passage of the smallest quantity of air through fissures in the barrel and bung. It allows to watch the progress of the yeast bath by the bubbling of the gas in this apparatus.

When this shivering becomes visible, then the time has come to use the yeast bath, which is in plain activity.

This small apparatus renders the greatest services, but I insist on the necessity to absolutely air-tighten the smallest fissures, without which precaution it will not work well. Nevertheless, the yeast bath will be first class to use.

Otherwise the air purifier is very simple to use.

HOW TO PRESERVE AN OPENED CAN.

When only half the contents are wanted on one day, care must be taken to place the closing stopper in place again as quick as possible after the taking out of a part of the contents after the can has been well shaken before the opening.

An opened can can be preserved in summer during 5 or 6 days and for 3 to 10 days in cold weather, but no longer.

AWAKENING OF THE YEAST AFTER LONG VOYAGES OR WHEN IT IS ON HAND FOR QUITE A WHILE.

The directions for preparing yeast baths stated before can be used every time the yeast is not over 5 to 6 weeks old, but when the yeast is older and it remains good for 5 or 6 months, the start must be made by awakening it.

In such a case the simple method consists to apply the system which we advocate for the concentrated yeasts, which is given a little further on. A can of yeast is awakened the same as a bottle of concentrated yeast.

Or one can also operate by preparing a yeast bath by the first or second method, and wait 5, 6 or 8 days before fermentation manifests itself.

But with very old yeast to utilize it is best to mix with such yeast a part of the same yeast recently received or alcoholized yeast No. 118, which will occupy the field and attend to the rejuvenizing of the old cells.

WINE MAKING.

As to white wines, whether the white wine is made of white or red grapes, the same rules which have been given have to be followed as to the preparation of the yeast bath and its use.

For white wines the greater part of wine makers dispense with making a yeast bath, but place the yeast directly in the juice, as soon as it has left the press.

But at all times the results will be better when a yeast bath is prepared as before stated, particularly in cold years.

This part will be given to the care necessary to bestow

on the material, as has been stated before, and to the rest to be added to the juice on leaving the press.

In temperate regions one can content himself to mix the yeast bath with the juice as fast and in proportion as the grapes are crushed.

It is necessary to prepare a yeast bath when white wine is made of red grapes, which begins when the juice has been improved with sulphur by combustion of a sulphured wick or by other means.

Without the precaution of the yeast bath, the yeast used directly may be hindered by the sulphur, and act less or not at all.

In temperate or cold regions to hasten the ending of fermentation of white wines close the bung holes of the barrels every two days, then roll them 3 or 4 times, and then open the bung hole again.

This closing of the barrels which **MUST NOT LAST LONGER THAN THREE OR FOUR MINUTES**, cannot make them burst.

The rolling of the barrels causes a perfect stirring up of the juice, and the fermentations end as if they were carried on by good yeast.

This rule has been applied on thousands of barrels of white wine, and gives the best results.

When it is desired to ferment the wine in big vats in cold weather, stir the mass with a wooden paddle, or pole, as soon as one perceives that the fermentation languishes and takes too much time to finish.

The same when in the hot regions, one finds that the wines of high (strong) degrees have a too slow fermentation, it will be sufficient to raise the yeast buried with the settlement. By energetic stirring up, carried on as stated, the fermentation will set in again, and all sugar will disappear.

On another page useful advice for the cleaning of utensils, how to put vats, barrels, etc., in good condition, can be found.

These rules must be obeyed when the maximum result of the yeast shall be obtained.

HOW TO USE CONCENTRATED YEAST, SPECIALLY PREPARED FOR EXPORTATION.

To ship our yeasts to distant countries and tropical regions, we deliver same since 1896 in a specially concentrated shape, put in bottles of reinforced glass. The work of concentration being tedious, we cannot ship in this shape quicker than 14 days after order, except in cases where the race of yeast demanded has been prepared in advance.

We have adopted 3 sizes of bottles:

No. 1 containing the equivalent of 2 1-5 lbs.

No. 2 containing the equivalent of 5½ lbs.

No. 3 containing the equivalent of 8 4-5 lbs.

To render our concentrated yeast equal to our active selected yeast, described before, follow these directions.

For a bottle number one (1) take 1¾ pints water, 3½ ounces white sugar, 3 drams nourishing salts, and boil this solution 5 minutes; then let it cool to 30 deg. C., then put it in a can or other glass vessel of 1-3 larger capacity than the

volume of the solution. Having cleaned (scoured) very thoroughly, only then introduce in that vessel or bottle the contents of flask No. 1 of the concentrated yeast, then shake, then close up the mouth of the bottle with a perforated cork provided with a bent glass tube, putting the downward end in water or with an air purifier, or stop the bottle with a cotton cork or linen.

DO NOT FORGET THE COOLING OFF BEFORE ADDING THE YEAST.

Leave that glass bottle or vessel in a place where the surrounding temperature is from 20 deg. C. to 25 deg. C., and after 6 to 8 days or more exactly when the liquid will be in full active fermentation, prepare a yeast bath as told further on.

For flasks number two and three act in the same way by multiplying above proportions by $2\frac{1}{2}$ and 5.

THE GLUCOSIDES.

The glucosides of leaves of grand vines are shipped in soldered boxes.

They keep longer than a year, if the box remains intact.

If it is desirable to preserve only a part of the contents of a box of glucoside, for example to use it in another barrel, etc., or to use it the following year, to keep contents put them in a bottle which is filled only to three-fourths of its size, and which is closed and tied carefully.

Then the bottle wrapped in linen is placed in a kettle filled with cold water and heated up to the boiling point.

Let it boil for half an hour, and then cool off without taking it from the water.

Next day the stopper is sealed up, and the bottle is stored in the cellar.

The glucosides have a color somewhat brown, and a sour, disagreeable taste.

The good taste and flavor develop only by the fermentation.

DIRECTIONS FOR THE USE OF GLUCOSIDES.

Begin by shaking the box, before taking out the contents.

The quantity of glucosides to be used in 3 2-3 ounces per 22 gallons wine and do not increase the quantity of glucoside, which is calculated to give the maximum of improvement, as a larger quantity will hurt the fine quality of the wine.

The wine makers who employ the yeast directly without making a yeast bath add the glucosides at the same time as the yeast without other manipulation, but this method of using it gives less beneficial effects than those which I will give, and which consist in a yeast bath.

Take 11 quarts of water, 2 1-5 lbs. of white sugar, and 2 1-5 lbs. of glucosides.

Boil all for 5 minutes, then put the liquid in a can or jug which ought to have an air purifier for a stopper, or lacking it a clean linen.

Let cool off to between 25 deg. and 30 deg. Centigrade, and keep within these temperatures, then only introduce 2 1-5 lbs. of well-shaken yeast; mix it and wait 2 or 3 days till the fermentation shows plainly.

One can also use this yeast bath in the ordinary way stated before.

In place of sugar water, the same quantity of grape juice can be used to make the solution (yeast bath), BUT I ADVISE TO BOIL THIS LIQUID with the glucoside, taking care to add $1\frac{3}{4}$ quarts of water to avoid the thickening by cooking.

Cool then before adding the yeast, and use this yeast bath in the usual way.

One cannot judge the action of the glucoside by tasting the yeast bath, for, the quantity being enormous, the taste and odor are yet disagreeable.

It is only in the wine when properly proportioned that the fine effect will maintain itself.

For other uses of glucosides we will speak hereafter. For wines and fruits, say for improving, rejuvenizing of old defective wines, etc., of improving wines made of pasteurized juice, previous sterilization of juice, etc., the advantages to be drawn from the previous sterilization of grape juice, etc.

THE REFERMENTATION OF WINES WHICH REMAIN SWEET, AND THE REJUVENIZING OF WINES.

According as wines are sweet or dry, healthy or sick, there are sundry cases to consider.

First—Wines which remain sweet, free from disease.

Second—Wines which remain sweet and have a beginning of disease.

Third—Wines which are sick without being sweet.

Fourth—Sound wines which it is desired to referment or rejuvenize or improve.

Fifth—Refermentation of wines too much sulphured.

We can bestow here only a few lines on these questions. For fuller information you will have to write to the office, 718 East 138th street, New York .

If the wine is little or not at all sugared, add 2 1-5 pounds to $4\frac{1}{2}$ pounds of sugar for each 22 gallons; dissolve in a quart of water, and make use of 2 1-5 pounds to 4 2-5 pounds of our selected alcoholized yeast, according as the wine is more or less difficult to referment.

One begins by preparing in a barrel of about 40 gallons a bath (solution) of 11 quarts, without the use of grape juice.

After four days diffuse in the yeast barrel 22 gallons of wine to referment, to which add $4\frac{1}{2}$ pounds sugar and 3 2-3 ounces of nutritious salts, and heat the whole to 25 or 30 degrees C.

The day afterward—that is, the sixth day after the beginning of the preparation of the yeast bath—stir it up in a very sound cask, free from any trace or smell of burnt sulphur. Every day stir up the contents for a few minutes with a very clean stick.

After a fortnight, if the temperature is not less than 12 degrees Centigrade, the fermentation will show plainly and will end a short time after.

When a previous experiment made with a flask of No. 1 concentrated yeast on 110 gallons of wine has indicated that the wine is difficult to referment, add, besides and before the yeast-ing, 1 5-6 ounces of nourishing salts for every 22 gallons.

The using of glucosides of grand vines at the rate of 3 2-3 ounces for each 22 gallons of wine helps greatly to improve these wines.

These glucosides are added to the yeast bath.

REFERMENTING OF WHITE WINE.

For white wine use the same rules. Make the yeast bath as for the red wine; divide it up the sixth day between the various barrels containing the white wines, being careful to let the free space from a half to three-quarters of a gallon.

Then roll the barrels to mix the mass energetically.

Every day bung up for a few minutes the barrels to allow the rolling of them, stirring up the wine daily in that way until the fermentation has manifested itself, same as for red wine. I advise to use glucoside with the selected yeast if improvement of quality is desired.

If the fermentation of red or white wines is finished, add a little tannin, and draw off in sulphured barrels or casks. The clearing will then set in rapidly.

Cider.

Craon, September 29, 1899.

Dear Sir:—The last year I have tried your selected yeasts in small quantities. The result was surprising in every way. This year I will use it for my entire output.

I have exhibited the ciders made with your selected yeast and have received a silver medal for the same at the Agricultural Concourse, at Paris, last March.

A. GOUSSE.

Craone, February 28, 1900.

Dear Sir:—Last year I bought of you 21-5 pounds selected yeast for apples to make an experiment with some cider.

I have got a wonderful result. And this year I will use your selected yeast for all my output.

As I stated, the fermentation sets in almost immediately.

I use on my vats an air purifier, which worked from the next day after the filling of the casks.

After a fortnight I began drawing off, and my cider was very clear, strong and particularly of fine flavor.

The cider keeps better and hardens less during the heat.

I am in love with your goods and will recommend the same to all agriculturists.

I cannot but congratulate you on your discovery, which renders such grand services to the manufacturers of cider.

Whoever uses your selected yeasts one year will continue to use the same, and cannot dispense with them. Yours,

A. GOUSSE.

Plumeret, March 6, 1900.

Dear Sir:—I have the honor to inform you that I am highly satisfied with the use of your selected yeast, as well as glucosides. Have perfectly succeeded, particularly as to the fine taste, and taste and flavor are equally good.

Good apples were very dear, and I found a real saving in using your selected yeast and glucosides to get the same quality at less cost. I remain yours,

BERNHARD PATTON.

Le Mir, March 4, 1900.

Dear Sir:—I am satisfied with the results obtained from your selected yeast.

The fermentation works quickly; very clear increase of alcoholic strength gives a good flavor and a superiority over ciders not yeasted. Yours, etc.,

L. DROALEN.

Marconne, March 17, 1900.

Dear Sir:—I must say I am satisfied. The fermentation is active. The cider shows a notable improvement.

I will study the advantages in question, and expect still better results next year. Yours, etc.

HOUZEL STEAM CIDER FACTORY,

Quillebeuf, March 12, 1900.

Dear Sir:—In reply I must say that the cider I made is very clear and nice.

It ferments better with the selected yeast than without it, and I will make no more cider without using it. Yours,

E. BAILLIEU, Cider Manufacturer.

Pleybeu, February 28, 1900.

Dear Sir:—I hasten to reply I am very satisfied with the results I have received with your selected cider yeast.

The cider has fermented with your selected yeast, and following your instructions, I got a much finer cider than that naturally fermented.

Besides, the cider is beautifully clear and has more life. Yours.

DENIS AUFFRET.

La Bouveille, March 10, 1900.

Dear Sir:—For the seventh year I am using your selected yeast for table ciders, for pears and fruits, to distill.

For the second time I have used your selected yeast Thierache, which I used in 1898 the first time; and I experimented also in 1899 with your excellent glucosides.

Absolutely satisfied with the use of your selected yeast. My conviction is settled. Henceforth no more cider will leave my presses which is not yeasted.

My clients are my best salesmen. From them I get the best recommendations of my product, and if I inquire about their wishes, they reply as good as ever.

This year I raised the limit by using your glucosides "de Bonc" with your selected yeast. We have enjoyed the result of an incomparable sweetness. My clients were more than satisfied with the result.

The glucoside ciders have more body, are softer, and the flavor of a marvellous fineness—really first-class ciders, which are preferred by many to wines of repute.

I work as directed: have used 2 1-5 pounds glucosides, boiled, to 42-5 pounds of selected yeast for 600 gallons of apples to press. The result was excellent. I hold myself to these proportions.

I have become used to using your goods with the care required, and find it an expense for every barrel of cider, but I know very well that I am fully repaid by the prices I get for my cider—\$6 for 22 gallons here, taxes extra. (There is a tax on cider in France.)

This cider is absolutely from juice of sound fruits.

I have no other secrets of manufacture.

The superiority of yeasted ciders outside of the regular and active fermentation shows little till about a month or less, and manifests better later to keep and strengthen itself, particularly in glucosed ciders.

This is important to remember.

I have yeasted cider in bottles of two and three years of age, which improved certainly in quality. The action of the yeast is not a blind for the eyes, and doesn't give a fugitive perfume, but one perfectly fixed.

As to the preparations of the yeast bath and the use of the yeasts that is of such simplicity, and consequently at the service of every intelligent person, I remain,

BILLOET LANDOUZY.

Versailles, March 20, 1900.

Dear Sir:—In reply, I am glad to tell you that I am highly satisfied with your selected yeast Vallee d'Auge, fine fermentation, clear, and above all, a very agreeable flavor. I consider, like Mr. Noel, your yeasts indispensable. I remain, etc.,

CAMPE,

Versailles Cider Factory.

FERMENTATIONS OF CIDER BY SELECTED YEASTS.

Origin of Cider Yeasts.—The spontaneous fermentation of apple or pear juice takes place by yeast, microscopic mushrooms, of which the spores are carried by the air and deposited on the apple or pear.

Among those yeasts the *Sacharomyces Mali* is the most important, presents itself usually in the shape of elliptic cells in the interior of which can be seen under the microscope, particularly if they are young, a clear bladder, and all around a homogeneous protoplasm on the young globules granulated on the old ones.

The reproduction of the *sacharomyces* takes place by budding.

It has been demonstrated that the natural yeast of wine constitutes an assembly of which can be extracted different *sacharomyces*, the ones producers of more alcohol, the others furnish more vinosity, others creating the flavor, others again, on the contrary, of poor quality, cause only slow fermentations.

It has also been demonstrated that the yeast of cider and the yeast of pears are also composed of different races, of which each one acts in a special way on the juice of apples and pears.

These yeasts, in appearance similar, show great differences between themselves—the one temperature suits the one better than the other; such a degree of acidity to one kind, by others sugar is preferred and transformed, and finally the nature of the products propagated and the flavor developed will vary with the fermenting liquid.

The natural evolution of spores in the juice of apples or pears gives birth to a mixture of yeasts and the proportion of cells will not be constant, for the one or other race can develop itself more or less. **THIS IS WHAT EXPLAINS** the variations in the quality of a cider; it will be in effect more or less rich in alcohol, in fixed or volatile acid, more or less sugar, more or less fine and its keeping will be more or less assured.

In the common fermentation of cider, one finds a great number of *sacharomyces* of moulds and bacteria.

This fermentation goes on under the rule of so many different agents, each one bearing a particular action on the juice, rarely very regular.

Consequently it is interminable, as the natural ferments of apples are little vigorous, and their life is endangered by too great a number of bacteria, which cause a persistent trouble.

By the art micro-biology, I isolate the best yeasts among the cells which make the cider ferment, and I cultivate them in nourishing juice of vegetable origin with all possible care, following the instructions of Mr. Pasteur, my illustrious teacher.

These cultures of pure yeast being introduced into the juice of cider before the beginning of the natural fermentation, prevent the wild yeasts from evolving and beget the unique cider under their good influence.

When the alcoholic fermentation of the cider ends by a pure selected yeast the cider clears quickly, for it cannot nourish the microbes which cause the greater part of trouble.

I have obtained the possession of a large number of selected yeasts of the grandest fruits of the Vallee d'Auge Bonce, apples Capendu de la Sarthede l'Orue de la Thierache, etc.

Selected yeast of grand growths (fruits) show their quality to cause a normal fermentation, and clear the common ciders quickly.

They give them a fine flavor like that of the fruit of which the yeast has been extracted.

GLUCOSIDE EXTRACTED OF LEAVES OF CHOICE PLANTS.

I have already explained that the glucosides are extracts of leaves, of large and small trees bearing the fruits.

The use of these glucosides for the improvement of ciders met with success since 1898.

In 1899, the following year, a greater quantity of glucosides was used in conjunction with the selected yeasts for the fermentation of ciders.

I call again to the attention that the glucoside extract of leaves of apple trees divide themselves, under the influence of fermentation, in a fine flavor and in sugar which ferments with that of the juice.

The glucosides by themselves taste badly, the fine flavor develops itself during the fermentation.

All the reports which have been made to me on the use of selected yeasts and glucosides, show very remarkable effects, and much more expressed than where the unique fermentation was produced by the influence of the selected yeasts alone.

SELECTIONS OF YEASTS.

Generally ciders are fermented by such selected yeasts coming of choice apple trees which near most to the taste which it is desired to obtain.

I dare say that after information which has been given me by an excellent practitioner (Mr. P. B. Noel) the selected yeasts of different great vines of Champagne Ay Bonzy, Cramant, Verzenay, alike are preferable to give cider a finer flavor than the yeasts of apples, particularly if they are used in conjunction with glucoside extracts of apple leaves.

HOW TO USE SELECTED YEAST FOR THE FERMENTATION OF APPLE AND PEAR CIDER.

Two and one-fifth pounds are sufficient to ferment 110 to 550

gallons of apple or pear cider, if the directions are followed.

While waiting to use the selected yeasts, the cans with their fastenings intact must be kept standing in the cellar.

Just before using, shake the can well, so as to mix up the ferment which has settled to the bottom of the nourishing liquid, and when emptied rinse out with some juice so as not to lose any yeast adhering to the sides.

YEAST BATH.

Two or three days before the beginning of cider making, prepare a yeast bath of the selected yeast.

This bath is made to give the yeast more efficiency, with a smaller quantity, as much better results are got than by using the selected yeast directly, without the precaution of the previous yeast bath.

THERE ARE TWO WAYS TO MAKE THE YEAST BATH.

First Method.—Crush a sufficient quantity of fruit to obtain 9 quarts of juice, which must be at once separated from the pulp; heat slowly to 30 deg. C., with hardly lukewarm.

Do not exceed this temperature; then add 2 1-5 lbs. selected yeast, and proceed to work as directed later.

When the yeast bath is finished it is sufficient to place in fermentation 110 to 220 gallons of cider; but if it is desired to make 2 1-5 pounds selected yeast suffice to ferment 440 gallons, add 10 gms. of nourishing salts to use as yeast food and to give it more power.

Stir with a clean stick to dissolve the salts and mix the same with the yeast. Then after two days add 9 quarts of apple cider and 10 grammes of nourishing salts, so as to have 18 quarts of yeast bath, which ought to be used 24 hours after—that is, 3 days from beginning of operation, but it is best to wait 4 days.

To sum up, if there are less than 220 gallons to be fermented with 2 1-5 pounds of yeast, it is enough to make 9 quarts of the yeast bath, as well as to make the double quantity if one wants to ferment 440 gallons by means of a can of 2 1-5 pounds of selected yeast, or even 550 gallons.

It is self-understood that proportionate quantities of yeast and yeast baths are required to ferment a larger quantity of cider, as for 880 gallons 4 2-5 pounds of selected yeast are taken to make 36 quarts of apple or pear juice, to which are added 40 grammes of nourishing salts, as stated before.

If luxurious ciders are wanted, a larger quantity of selected yeast is required, and 2 1-5 pounds are used for from 66 to 110 gallons, taking care to prepare the yeast bath uniformly.

SECOND METHOD OF YEAST BATH.

Instead of apple juice, sugar water can be used in proportion of 2 1-5 pounds for 9 quarts of water, always adding 10 grammes of tartaric acid and 10 grammes of nourishing salts.

This sugared water is very slowly luke-warmed to less than 30 degrees Centigrade; pour in 2 1-5 pounds of selected yeast, and end the preparation as stated further on.

When it is desired to ferment 440 gallons of cider with 2 1-5 pounds of selected yeast, prepare at first 9 quarts of yeast bath, to which add in about two days 9 new quarts of sugar water, taking 2 1-5 pounds of sugar for same and 10 grammes of nourishing salts.

In this case the yeast bath of sugar water must not be used until three days after the commencement of preparation, and the fourth day is preferable.

END OF PREPARATION OF SELECTED YEAST BATH.

A temperature of over 30 degrees Centigrade is injurious to the yeast sufficient to paralyze it.

One can keep the yeast bath prepared after one or the other of these methods in a vessel closed or covered by a clean linen in a room the temperature of which remains between 15 and 20 degrees Centigrade. IF THE YEAST IS NOT KEPT IN A WARM ROOM it will not ferment, and the operation will not succeed.

PREPARATION TO MAKE A SELECTED YEAST BATH.

If there is a small selected yeast bath to make—say 9 or 18 pounds—a glass vessel can be used, or, better, a stone jar or pitcher, previously well scalded, so as to be scrupulously clean, or a small barrel.

Take care always to cover the receiver with a clean white linen.

To prepare a large quantity of selected yeast bath, take a barrel or cask, care to be used with yeast bath cask. The cask in which the yeast bath is to be prepared must be sound and free from all bad odors. Scour it thoroughly with boiling water before using it. Provide it with a new faucet (which should also be scalded) to draw the selected yeast bath. Then place on a timber in a place or room easily warmed.

It is absolutely requisite that every object coming in contact with the fruit—selected yeast, yeast bath, juice or cider—must be kept rigorously clean. That is a condition which should not be overlooked, and without which there will be no good fermentation.

Cover the bung-hole with a clean, folded linen, to prevent the entry of minute particles of dust, and wait 48 hours before using the selected yeast bath.

One can also close the bung-hole by a small air purifier, thanks to which the liquids keep free from contact with impure air, which will give more security.

This little apparatus permits to preserve the ullage of casks sundry weeks without the cider losing any of its qualities.

HOW TO KNOW THE RIGHT TIME WHEN TO USE THE YEAST BATH.

The air purifier is placed carefully on the cask containing the yeast bath (all fissures being well stopped up to prevent the passage of the smallest quantities of air by any leak in the cask or bung), giving a very large advantage. It allows to watch the progress of the working of the yeast bath by the slip of gas in this apparatus. When this slip has become visible, it is time to use the yeast bath, which is in plain activity.

This small apparatus renders the greatest services, but I insist on the necessity of absolutely stopping up the smallest leaks, without which it cannot functionate. But the yeast bath will, nevertheless, be very good to use.

Besides, the putting up of the air purifier is very simple.

USE OF THE YEAST BATH.

The yeast bath must always be prepared two days before the

crushing of the apples, so the yeast bath can be used in plain activity without delay, which is very important. It is still better to make it three or four days in advance.

Whatever system of preparing the yeast bath is followed, it must be used as soon as it is in plain fermentation, for that is the time when the best effects will be gotten.

Mix some of it with the ground-up fruit, dividing it up amidst the entire mass; then it will act during the process of grinding.

Those who do not put it in during the grinding, mix the yeast bath with the juice.

Then do the work as usual.

HOW TO USE GLUCOSIDES.

Commence by shaking the box before taking out contents. The quantity of glucosides to use is 2 to 3 2-3 ounces per 22 gallons. Consequently a box containing 21-5 pounds is sufficient for a quantity of 220 gallons of cider.

Do not increase these quantities, which give the maximum of improvement; a larger dose will injure the fineness of the cider.

It is good to know that one can without fear use as much yeast as one wants to, even 2 1-5 lbs. for 22 gallons, but no more than 1-10 box of glucosides must be used for each 22 gallons.

Even the mild dose of 2 ounces per 22 gallons is very advantageous, in proportion to price, the degree of improvement is very great.

Put the glucosides in the yeast bath the same as the yeast.

PREPARATION OF SPARKLING CIDER.

To make first-class cider remain sweet and foaming, it is advantageous to use the selected yeast of grand vines of the Champagne, which, notwithstanding that they give fine results furnish less fineness of the relish of the foam.

The cider is prepared and made to ferment with all possible care by means of a yeast bath in plain activity to which is added the glucoside in proportion of 2 ounces for each 22 gallons if the maximum of quality is desired.

The precaution must be taken to watch the product daily and taste it.

As soon as the sugar has nearly disappeared, that is, when the cider is still slightly sweet—which is not desired—the fermentation must be abruptly stopped.

That can be done in two ways:

The first, which is mostly used by dealers, consists in adding to the cider 6 to 8 grammes bi-sulphide of potash for each 22 gallons.

Dissolve the sulphide in a little cider and mix the solution with the rest of the cider.

But this process is not to be advised, because it mixes an antiseptic with a drink.

But the use of sulphides and bisulphides is tolerable, provided not too large a dose is used, **BUT IT IS MUCH BETTER TO AVOID THE USE OF THESE PRODUCTS**, which, while not really dangerous to health, are not hygienic, and can cause with time troubles of digestion when too great a quantity has been consumed.

The second method is much preferable. It consists in draw-

ing off the cider in barrels which have been sulphured by burning sulphur wicks carefully as per some of directions given a little later.

The cold stops the fermentation, and the cider will remain sugared and accumulate much foam when bottled.

SOME OBSERVATIONS ON THE SULPHURING BY SULPHUR WICKS.

This little operation, which permits the preservation of casks a certain time without alteration, requires intelligence.

A barrel must be entirely dry before sulphuring, for sulphuric acid dissolves in water, and may give a very bad taste, like rotten eggs, to the wine or cider, if the barrel is immediately filled.

But that has nothing to say if the cask is not used right away, but pretty long after the operation. It must not be done till the interior is completely dry.

Do not let remain in the barrels or casks any ashes or parts of burned sulphur, as they are liable to contaminate the wine.

The length of time to sulphur depends on the degree of infection, and is particular in relation to the purpose for which it is made, and the nature of the wine placed in the barrel.

When the cask is to be used at once after sulphuring for white wine juice for fermenting, then one must not sulphur or almost not, except that the juice is shipped soon after the crushing or pressing.

The sulphuring prevents the fermentation for a variable time, according to the degree of the intensity of the operation.

LIST OF SELECTED YEASTS.

Alicante, Alsace, ARAMON, Arbane, Arbois, Asti, Avize, AY, Barbera sec, Barolo, Barsac, Beaune, BEAUJOLAIS, Bordeaux rouge et blanc (tous les crus et tous les cepages), Bourgogne rouge et blanc (tous les crus et les cepages), Bouzy, Cabernet-Sauvignon, Capri, Carignan, Cassis, CHABLIS, CHAMBERTIN, CHAMPAGNE, Chianti, Chinon, Corton, Cot, Coteaux de Chevrieres, Cotes roties, Cramant, Douce-

Noire, Ecouteaux, SAINT-EMILION, Ermitage, Etraire, Fendants, Fleurie, FOLLE BLANCHE DE COGNAC, Gamay, Gentil, Grenache, Gringet, Gris-Meunier, Chateau La Jaille (Sarthe) (Ed. de Maisonneuve), Johannisberg, Joubertin, Joue, St.-Julien, Julienas, Jurancon rouge et blanc, Lambrusco, Malbec, Mancin, MARGAUX, Marsala, Martigne (Anjou), MEDOC, Merlot, Meursault, Mondeuse, Montrachet, Moselle, Moulin-a-Vent, Murinais, MUSCADET du Clos des Cedres, Chateau de Clermont (comte de Maupassant), Muscat, Musigny, Neuchatel, Noble, Nuits, Pagny, Percant, Pinot, Piquepoul, Polcevera, Pomerol, Pomard, Pouilly, Haut-Preignac, Ribeauville, Richebourg, Riesling, Riquewihr, ROMANEE CONTI, Roussette rouge et blanche, Roussillon, Saumur, SAUTERNES, Servagnin, Thiaucourt, Thorins, Vallet, Verdot, VERZENAY, Volnay, Clos de Vougeot, Vouvray, etc.

The more vigorous and active selected yeasts are printed with large type.

HOW TO SELECT YEASTS FOR RED-WINE WINES.

We advise particularly the selected yeasts Aramon, Beaujolais, Chambertin, Saint-Emilion, and above all the selected yeast Romanee Conti, which has succeeded in the whole of France, according to the yearly inquiries made since 10 years, and then particularly we recommend alcoholized yeast No. 118.

For white wines we advise chiefly selected yeasts Chablis, Champagne, Verzenay and Sauternes.

Selected yeasts acclimated for all regions.

We have special yeasts of Gamay, Pinot, Cabernet-Sauvignon acclimatized to the conditions of existence of all juices of common wines of the south.

We have as well races of selected yeasts of vines from all regions separated by regions.

For common southern wines we advise to regulate the fermentation by yeast No. 97, which is a selected yeast of Aramon, extremely vigorous.

In every region, if it is not desired to modify the natural taste of wine, use special alcoholized yeast No. 118, which regulates the fermentation, increases the degree of alcohol without modifying the peculiar characteristics of the wine.

Special Algerian yeasts will stand very high temperatures.

The selected yeasts have always the grape for their first origin. Their use in wine making provides a natural element which is no stranger, and that is one of the best reasons for the use of selected yeasts, and one of their recommendations to the wine makers.

The use of the selected yeasts is very simple, directions given previously.

COMPARISON OF TEMPERATURES.

10° Centigrade = 50½° Fahrenheit

15° " = 58½° "

20° " = 68½° "

25° " = 77° "

30° " = 87½° "

35° " = 95° "

40° " = 104½° "

INDEX.

	Page.
Nature and Origin of Yeast.....	1
Nature and Origin of Fermentation.....	1
Saccharomyces and Branches.....	1
Yeast, Where Does it Come From.....	2
Yeast, Pure Selected, How Obtained.....	3
Glucoside Extracts	4
Main Conditions for Success.....	6
Trials To Be Made.....	6
Quick Clearing	6
Results of Using Pure Selected Yeasts and Glucosides.....	7
Success of It.....	8
Testimonials	8-22
Selected Yeast, How to Use It.....	22
Glucosides, How to Use Them.....	30
Yeasts, How to Select.....	22
Method of Use of Selected Yeasts.....	22
Storage of It.....	22
Proportions	23
How to Act in Cold Weather.....	23
Yeast Baths and Their Preparation.....	24
First Method	24
Second Method, Without Juice.....	25
Third Method.....	26
Temperatures.....	28
Yeast Bath, How to Use.....	27
Cold Vintages	28
Temperature of Yeast Baths.....	28
How to Prepare Small Yeast Baths.....	28
Yeast Casks, Care to Use.....	28
Yeast Casks, Care to Use in Cold Weather.....	28
Open Yeast Can, How to Preserve.....	29
Yeast Awakening After Long Voyage.....	29
Wine Making	29
Concentrated Yeast, How to Use.....	30
Glucosides.....	31

How to Use Same.....	31
Wines—Their Refermentation	32
Wines—Their Rejuvenizing	32
Wines—White, Their Refermentation.....	33
Cider.....	33
Testimonials.....	33-35
Fermentation by Selected Yeasts.....	35
Selection of Yeast for Cider.....	36
Cider, Yeast Bath for.....	37
First Method	37
Second Method	37
Sparkling Ciders	39
Sweet and Sparkling Ciders, and How to Make Them.....	39
Sulphuring—Observations On	40
Yeasts, Selected List of.....	41
Yeast, Selected, General Rules.....	42
Temperature Comparisons	42

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